IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Shaily Verma et al.
Serial No.	:	10/517,132
Filed	:	December 6, 2004
For	:	INTERNETWORKING BETWEEN WLAN AND A MOBILE COMMUNICATIONS SYSTEM
Examiner	:	Roberta A. Shand
Art Unit	:	2616
Conf. No.	:	6857

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CORRECTED APPEAL BRIEF

In response to the Office communication of 15 June 2009, the Appellants submit this Corrected Appeal Brief to the Board of Patent Appeals and Interferences, on appeal from the decision of the Examiner dated 24 October 2008, finally rejecting Claims 1-27.

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Real Party in Interest

The real party in interest is:

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Related Appeals and Interferences

The Appellants assert that no other appeals or interferences are known to the Appellants, the Appellants' legal representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-27 are pending. Claims 1-27 have been amended. The rejection of Claims 1-27 is appealed.

Claims 1-4, 7- 9, 11, 12, 14-18, and 21-27, stand finally rejected under 35 USC 102(e) as anticipated by US 7,042,855 to Gilchrist et al. Although Claim 13 has not been specifically rejected, it is included in the Examiner's summary of Claims rejected as anticipated by US 7,042,855 to Gilchrist et al.

Claims 5, 6, 10, 19 and 20 stand finally rejected under 35 USC 103(a) as unpatentable over Gilchrist et al in view of US 7,054, 945 to Hurtta et al.

Status of Amendments

All amendments to the Claims have been entered.

Summary of Claimed Subject Matter

Independent Claim 1 relates to a method for supporting an interworking between a Wireless Local Area Network WLAN and a mobile communications system (page 2, lines 17 to 19) the mobile communications system having a first Support Node (SGSN 135, page 5, lines 10 -11) for interfacing a radio access network (UTRAN 165) to a core network (170) (page 5, lines 19 - 21) and a second Support Node (140) for interfacing the mobile communications system to a second communications system (145, Figure 1), the method comprising the steps of:

providing an interworking function IWF (105, page 4, line 32) associated with the WLAN (110, page 5, lines 5 - 9) and coupled to the mobile communications system (165);

establishing at least one Tunneling Protocol- User plane tunnel (199, page 7, lines 13 - 14) between the IWF and the second support node (140) for transferring data signals (page 6, lines 24 - 25); and

establishing at least one Tunneling Protocol - Control plane tunnel (198) between the first Support Node (135) and the second Support Node (140) for transferring control signals (page 7, lines 11–12).

Independent Claim 15 relates to an apparatus for supporting an interworking between a Wireless Local Area Network WLAN and mobile communications network (165, page 3, lines 17–18), the mobile communications network having a first Support Node (SGSN 135, page 5, lines 10–11) for interfacing a radio access network (UTRAN 165) to a core network (170, page 5, lines 19 -21) and a second Support Node (140) for interfacing the mobile communications system to a second communications

system (145, Figure 1), the interworking being facilitated by an InterWorking Function IWF (105, page 4, line 32), the apparatus comprising:

means for establishing at least one Tunneling Protocol-User plane tunnel (199, page 7, lines 13-14) between the IWF and the second support node (140, for transferring data signals (page 6, lines 24-25); and

means for establishing at least one Tunneling Protocol-Control plane tunnel (198) between the first Support Node (135) and the second Support Node (140) for transferring control signals (page 7, lines 11-12).

Independent Claim 23 relates to a mobile terminal (120) comprising:

means for forwarding an associate request to an access point (110,page 8, lines 7-9) of a wireless local area network;

means for receiving an associate response from said access point (110) of said wireless local area network (page 8, lines 10-11);

means for registering a wireless local area network coverage area as a new routing area (page 8, lines 22-23);

means (199) for establishing data communications between said mobile terminal (120) and a gateway general packet radio service (GPRS) support node (140, page 9, lines 5-9), and

means (198) for establishing signaling communications between said mobile terminal (120) and a gateway general packet radio service GPRS support node (140) via universal mobile telecommunications system UMTS terrestrial radio access network (165) and a serving GPRS support node (140, page 9, line 30 to page 10, line 7).

Grounds of Rejections to be Reviewed on Appeal

1. Whether Claims 1 to 4, 7-9, 11-18, 21 and 22 are patentable under 35 USC 102(e) over US Patent 7,042,855 to Gilchrist et al.

2. Whether Claims 5, 6, 10, 19 and 20 are patentable under 35 USC 103(a) over Gilchrist et al in view of US Patent 7,054,945 to Hurtta et al.

Argument

(1) 35 USC 102(e)

The Examiner has rejected Claim 1 as being anticipated by US 7,042,855 to Gilchrist et al. The Examiner has asserted that fig. 8 of Gilchrist et al teaches "providing an IWF (MSC/IWF) associated with the WLAN". The Appellants can not agree. First of all, figure 8 of Gilchrist et al does not show a WLAN. Rather, figure 8 shows a wired LAN 817, which couples base station 802 to local corporate intranet 810, which is wired. Wired LAN and wireless LANs have entirely different strengths, weaknesses, features, characteristics and limitations. Furthermore, the mobile switching center, which is shown in figure 8 but not identified in the description of figure 8, is not coupled to a LAN, either wired or wireless. Rather, mobile terminal 801 couples directly to base station 802 without the intervention of an IWF. An IWF couples two networks. See column 9, lines 41 to 43. Furthermore, it is well known that a mobile switching center couples a wireless communication system to a public switched telephone network, not a WLAN. See US Patent 6,091,953 to Ho et al, column 1, lines 34-36. It is therefore clear that Gilchrist et al does not apply to a WLAN, as in the instant invention.

The Examiner has further asserted that figure 8 of Gilchrist et al shows "establishing at least one tunneling protocol - user plane tunnel between the IWF (MSC/IWF) and the second support node (804) for transferring data signals". The Appellants can not agree. Nowhere does Gilchrist et al show or suggest any tunnel in the path between MSC/IWF and GGSN 804. Gilchrist does suggest, at column 4, lines 15 – 20, a user plane (data) tunnel but it does not involve the IWF or the MSC of Gilchrist. That is,

Gilchrist says that a data (user plane) tunnel is established between the Internet and the SGSN. It would have to go through the GGSN since no other path is shown, and certainly no path through the MSC/IWF is shown or described. Rather, Gilchrist et al states that an incoming address packet is encapsulated in a GPRS Tunneling Protocol. See column 4, lines 15-17. Gilchrist et al does describe a user plane tunnel at column 4, lines 15 -20. However, it is over IP to SGSN 205 via the GGSN 804, not as in the present invention between the GGSN and the mobile station via the WLAN and the IWF. In fact, Gilchrist et al has no WLAN. Control signals in the present invention are transferred between the first and second support nodes, not as in Gilchrist between the MSC and the IWF. Further, data signals in the present invention are transferred between the IWF and the second support node (GPRS support node), not between the MSC and the IWF, as in Gilchrist et al. A MSC is not a support node. See Fig. 1 of the present invention and the definition above for a MSC.

The Examiner has asserted that in figure 8 of Gilchrist et al, SGSN 803 is a first support node "for interfacing a radio access network to a core network". The Appellants can not agree. SGSN 803 interfaces base station 802 through GGSN 804 to Internet 806. In our Figure 1, SGSN 135, GGSN 140 and MSC 155 comprise core network 170, which interfaces to Internet 145. See page 5, line 5 to page 6, line 5, of our specification. Gilchrist et al. specifically deals with local routing of data between mobile stations (see column 9, lines 56-57. The present invention does not involve communication between mobile stations, but rather is directed to a mobile station requesting data via a UMTS, roaming into a WLAN coverage area, and downloading the data through the WLAN via the IWF.

It is therefore clear that Gilchrist et al does not affect the patentability of Claim 1. Since the Examiner has asserted no other reference against Claim 1, the Examiner's rejection of Claim 1 should be reversed for this reason alone.

The Examiner has rejected Claim 15 as being anticipated by US 7,042,855 to Gilchrist et al. The Examiner has asserted that Gilchrist et al "teaches (fig. 8) an apparatus for supporting an interworking between a WLAN and mobile communications network". The Appellants can not agree. Nowhere does figure 8 show or suggest a WLAN (Wireless Local Area Network). Rather, Gilchrist et al shows a wired LAN 817 which couples base station 802 to local network 810. It is therefore clear that LAN 817 is not wireless, but rather is wired.

The Examiner has asserted that in fig. 8 of Gilchrist et al, SGSN 803 is a first support node "for interfacing a radio access network to a core network". The Appellants can not agree. SGSN 803 interfaces base station 802 through GGSN 804 to Internet 806. Gilchrist et al specifically deals with local routing of data between mobile stations (see column 9, lines 56 – 57). The present invention does not involve communication between mobile stations but rather is directed to a mobile station requesting data via the UMTS, wandering into a WLAN coverage area and downloading the data through the WLAN via the IWF.

The Examiner has asserted that in fig. 8 of Gilchrist et al, the interworking between a wireless local area network and mobile communications network is "facilitated by an IWF (MSC/IWF)". The Appellants can not agree. First of all, figure 8 of Gilchrist et al does not show a WLAN. Rather, figure 8 shows a wired LAN 817, which couples base station 802 to local corporate intranet 810, which is wired. Furthermore, the

mobile switching center, which is shown in figure 8 but not identified in the description of figure 8, is not coupled to a LAN, either wired or wireless. Rather, mobile terminal 801 couples directly to base station 802 without the intervention of an IWF. See column 9, lines 41 to 43. In addition, Gilchrist et al specifically states, in column 8, lines 64 to 65, that their invention does not require access to an interworking function (IWF) at the MSC.

The Examiner has asserted that in fig. 8 of Gilchrist et al, the apparatus comprises "means for establishing at least one tunneling protocol - user plane tunnel between the IWF (MSC/IWF) and the second support node 804 for transferring data signals". The Appellants can not agree. Gilchrist et al describes a tunnel at column 4, lines 15-20. However, it does not involve an IWF or an MSC.

The Examiner has further asserted that in fig. 8 of Gilchrist et al, the apparatus comprises "means for establishing at least one tunneling protocol - control plane tunnel between the first support node 803 and the second support node 804 for transferring control signals (col. 9, line 42, - col. 10, line 11)". Gilchrist et al establishes an address tunnel between SGSN 803 and GGSN 804 (a control plane tunnel). However, nowhere does Gilchrist et al show or suggest a

"means for establishing at least one Tunneling Protocol - User plane tunnel between the IWF and the second support node for transferring data signals",

as specifically recited in Claim 15. Rather, in Gilchrist et al, there is no tunnel which transfers data signals between MSC/IWF and any support node. In fact, at column 9, lines 53-67, Gilchrist et al describes routing of

packets between mobile stations. The present invention is directed to an interworking function (IWF) used by a mobile station between a 3G network and a wireless local area network (WLAN). As such, there is no routing of data between mobile stations. Furthermore, importantly, nowhere does Gilchrist et al show a user plane (data) tunnel between an IWF and support nodes. In fact, Gilchrist et al teaches away from such an arrangement. See column 9, lines 53-55, which states that no special handling is required to route packets between two mobile stations. Use of a tunnel is certainly special handling.

It is therefore clear that Gilchrist et al do not affect the patentability of Claim 15.

The Examiner has rejected Claim 23 as being anticipated by US 7,042,855 to Gilchrist et al. The Examiner has asserted that fig. 8 of Gilchrist et al teaches "means for forwarding an associate request to an access point of a wireless local area network (col. 6, lines 21-33)". The Appellants can not agree. Although Gilchrist et al describes access of mobile station 801 to local wired network 810, nowhere does Gilchrist et al show or suggest access of a mobile terminal to an access point of a wireless local area network, as set forth in Claim 23. Rather, Gilchrist et al provides access of mobile terminal 801 to corporate intranet 810, which is a wired network, not a wireless local area network. Nowhere does Gilchrist suggest, show or describe an access point nor any WLAN. A BSS is not an access point. A BSS is used in a UMTS, as explained above, while an AP provides access to a WLAN.

The Examiner has further asserted that fig. 8 of Gilchrist et al shows "means for receiving an associate response from said access point of said wireless local area network (col.10, lines 1-47)". The Appellants can not

agree. Nowhere does fig. 8 of Gilchrist et al show or suggest a wireless local area network, much less an access point of a wireless local area network. Column 10, lines 1-47, relates to transferring or deleting of a context initiated by mobile station 801. Nowhere does this portion of Gilchrist et al describe or suggest a wireless local area network or an access point. Context relates to handoff/handover when switching cells in an UMTS.

The Examiner has further asserted that fig. 8 of Gilchrist et al shows: "means for registering a wireless local area network coverage area as a new routing area (col. 10, lines 48-52)". The Appellants can not agree. Nowhere does fig. 8 of Gilchrist et al show or suggest a wireless local area network. Column 10, lines 48-52, relate to pre- registration of a set of mobile stations belonging to local network 810. As the Appellants have previously pointed out, local network 810 is a wired network, not a wireless local area network.

The Examiner has further asserted that fig. 8 of Gilchrist et al shows: "means for establishing data communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via an inter-working function". The Appellants can not agree. Nowhere does fig. 8 of Gilchrist et al show or suggest this structure. Rather, fig. 8 of Gilchrist et al shows MSC/IWF coupled to base station 802 along with mobile station 801. Data communication does not involve MSC/IWF. As explained above, an MSC is used between a mobile station and a UMTS.

The Examiner has further asserted that fig. 8 of Gilchrist et al shows "means for establishing signaling communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via a universal mobile telecommunications system (UMTS) terrestrial radio access network and a serving GPRS support node (col. 5, line 55-67). The Appellants can not agree. Gilchrist et al describes mobile terminal 801

wirelessly coupled to base station 802. Column 5, lines 55 to 67, indicates that the base station 802 processes only data, while all control PDUs are forwarded to SGSN 803.

It is therefore clear that the Examiner's rejection of Claim 23 as anticipated by Gilchrist et al is error.

(2) 35 USC 103(a)

The Examiner has cited US 7,054,945 to Hurtta et al against subclaims 5, 6, 10, 19, and 20. Hurtta et al relates to a technique for providing an announcement in a 3G network. Nowhere does Hurtta et al show or suggest any interworking between a WLAN and a mobile communications system, using an interworking function. Nowhere does Hurtta et al establish a Tunneling Protocol-User plane tunnel, nor a Tunneling Protocol-Control plane tunnel, as set forth in Claim 1. The Applicants therefore submit that Hurtta et al does not affect the patentability of subclaims 5, 6, and 10, which are dependent from Claim 1. Furthermore, nowhere does Hurtta et al show or suggest an Interworking Function, a Tunneling Protocol-User plane tunnel between an interworking function and a second support node for transferring data signals, and a Tunneling Protocol-Control plane tunnel, as in Claim 15. The Applicants therefore submit that Hurtta et al does not affect the patentability of subclaims 19 and 20, which are dependent from Claim 15. The Appellants therefore submit that:

a) Dependent Claims 2 -14 are patentable as their parent Claim 1;

b) Dependent Claims 16 – 22 are patentable as their parent Claim 15; and

c) Dependent Claims 24 - 27 are patentable as their parent Claim 23.

The Appellants therefore submit that the Examiner's rejection is improper, and should be reversed. A decision to that effect is respectfully solicited.

Respectfully submitted,
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Claims Appendix

1. A method for supporting an interworking between a Wireless Local Area Network (WLAN) and a mobile communications system, the mobile communications system having a first Support Node for interfacing a radio access network to a core network and a second Support Node for interfacing the mobile communications system to a second communications system, the method comprising the steps of:

providing an interworking function (IWF) associated with the WLAN and coupled to the mobile communications system;

establishing at least one Tunneling Protocol – User plane tunnel between the IWF and the second Support Node for transferring data signals; and

establishing at least one Tunneling Protocol – Control plane tunnel between the first Support Node and the second Support Node for transferring control signals.

2. The method of claim 1, wherein the mobile communications network comprises a UMTS network, the first Support Node comprises a Serving General Packet Radio Service (GPRS) Support Node (SGSN), the second Support Node comprises a Gateway GPRS Support Node (GGSN), the Tunneling Protocol - User plane tunnel comprises a GPRS Tunneling Protocol - User Plane (GTP-U) tunnel, and the Tunneling Protocol - Control Plane tunnel comprises a GPRS Tunneling Protocol - Control Plane (GTP-C) tunnel.

3. The method of claim 2, wherein the IWF is configured as a logical SGSN with respect to the data signals.

4. The method of claim 2, wherein said step of establishing the at least one GTP-U tunnel comprises the step of defining a GTP tunnel in a GTP-U for at least one Packet Data Protocol (PDP) context in at least one of the GGSN and the IWF.

5. The method of claim 2, wherein said step of establishing the at least one GTP-C tunnel comprises the step of defining a GTP tunnel in a GTP-C for at least one Radio Access Bearer (RAB).

6. The method of claim 2, wherein said step of establishing the at least one GTP-C tunnel comprises the step of defining a GTP tunnel in a GTP-C for at least one Packet Data Protocol (PDP) context with a same PDP address and Access Point Name (APN) for tunnel management messages.

7. The method of claim 2, wherein a GTP-C carries GPRS mobility management functions.

8. The method of claim 2, further comprising the step of providing access to both the WLAN and the mobile communications system through a single point of attachment consisting of the GGSN.

9. The method of claim 2, wherein the Core Network includes, the GGSN and the SGSN, and the method further includes the step of maintaining a connection between a User Equipment (UE) and the CN while diverting data to the UE through the at least one GTP-U tunnel between the GGSN and the IWF.

10. The method of claim 2, wherein the mobile communications network comprises a Radio Network Controller (RNC) and the IWF is disposed on a WLAN side of the interworking, and the step of establishing the at least one GTP-U tunnel couples the IWF of the WLAN to the GGSN of the mobile communications network while bypassing the RNC and the SGSN of the mobile communications network.

11. The method of claim 2, further comprising the steps of:

authenticating a User Equipment (UE) by the mobile communications network;

communicating a result of said authenticating step to the IWF through the GGSN.

12. The method of claim 2, further comprising the steps of:

registering a WLAN coverage area as a different Routing Area (RA) with the mobile communications network; and

specifying an IWF address and Tunnel Endpoint Identifiers (TEIDs) for said step of establishing the at least one GTP-U tunnel, when one of a Packet Data Protocol (PDP) request of a modify PDP request is received from a User Equipment (UE).

13. The method of claim 2, further comprising the steps of:

employing the GGSN as a Foreign Agent (FA) to handle UE mobility; and

informing the SGSN to establish the at least one GTP-U tunnel.

14. The method of claim 2, further comprising the step of employing encryption used by the mobile communications network for a user connecting to the WLAN.

15. An apparatus for supporting an interworking between a Wireless Local Area Network (WLAN) and mobile communications network, the mobile communications network having a first Support Node for interfacing a radio access network to a core network and a second Support Node for interfacing the mobile communications system to a second communications system, the interworking being facilitated by an InterWorking Function (IWF), the apparatus comprising:

means for establishing at least one Tunneling Protocol – User plane tunnel between the IWF and the second Support Node for transferring data signals; and

means for establishing at least one Tunneling Protocol – Control plane tunnel between the first Support Node and the second Support Node for transferring control signals.

16. The apparatus according to claim 15, wherein the first Support Node comprises Serving General Packet Radio Service (GPRS) Support Node (SGSN), the second Support Node comprises Gateway GPRS Support Node (GGSN), the Tunneling Protocol – User plane tunnel comprises a GPRS Tunneling Protocol – User plane (GTP-U) tunnel, and the Tunneling Protocol – Control plane (GTP-C) tunnel.

17. The apparatus of claim 16, wherein the IWF is configured as a logical SGSN with respect to the data signals.

18. The apparatus of claim 16, wherein said means for establishing the at least one GTP-U tunnel comprises means for defining a GTP tunnel in a GTP-U for at least one Packet Data Protocol (PDP) context in at least one of the GGSN and the IWF.

19. The apparatus of claim 16, wherein said means for establishing the at least one GTP-C tunnel comprises means for defining a GTP tunnel in a GTP-C for at least one Radio Access Bearer (RAB).

20. The apparatus of claim 16, wherein said means for establishing the at least one GTP-C tunnel comprises means for defining a GTP tunnel in a GTP-C for at least one Packet Data Protocol (PDP) context with a same PDP address and Access Point Name (APN) for tunnel management messages.

21. The apparatus of claim 16, wherein a GTP-C carries GPRS mobility management functions.

22. The apparatus of claim 16, further comprising means for providing access to both the WLAN and the mobile communications network through a single point of attachment consisting of the GGSN.

23. A mobile terminal, comprising:

means for forwarding an associate request to an access point of a wireless local area network;

means for receiving an associate response from said access point of said wireless local area network;

means for registering a wireless local area network coverage area as a new routing area;

means for establishing data communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via an inter-working function; and

means for establishing signaling communications between said mobile terminal and a gateway general packet radio service (GPRS) support node via a universal mobile telecommunications system (UMTS) terrestrial radio access network and a serving GPRS support node.

24. The mobile terminal according to claim 23, wherein said means for registering a wireless local area network coverage area as a new routing area comprises forwarding a packet data protocol context request to said serving GPRS support node.

25. The mobile terminal according to claim 23, wherein said means for registering a wireless local area network coverage area as a new routing area comprises forwarding a modify packet data protocol context request to said serving GPRS support node.

26. The mobile terminal according to claim 24, wherein said means for registering a wireless local area network coverage area as a new routing area further comprises means for receiving a packet data protocol context accept response from said serving GPRS support node.

27. The mobile terminal according to claim 24, wherein said means for registering a wireless local area network coverage area as a new routing area further comprises receiving a modified packet data protocol context accept response from said serving GPRS support node.

Evidence Appendix

US Patent 6,091,953 to Ho et al, a copy of which is enclosed.

Related Proceedings Appendix

The Appellants assert that no other proceedings are known to the Appellants, the Appellants' legal representative, or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.